

The *BSO Plus Safety Topic* is a review designed from the BSO Plus agenda. This safety topic is your way to stay current on the safety information over the 3 years between BSO Plus and BSR.

REFRACTORY CERAMIC FIBRES (RCFs)



What is it?

Refractory Ceramic Fibres (RCFs) are man-made mineral fibres that are manufactured from either molten kaolin clay or molten alumina and silica mixtures. RCFs are widely used to replace asbestos in applications requiring high heat resistance. In bulk form, RCFs are white or grey fibrous material, but they can also be manufactured into blanket form or even mixed into solid cast products.

Where is it used?

RCFs are commonly used in the steel, petrochemical, aerospace, and automotive industries. Because of their high thermal resistance, RCFs are used in high temperature applications such as furnace linings and doors, kilns, catalytic converters, brake pads, and heat shields.

You might find RCFs in:

- Thermal insulation in industrial boilers
- Heat resistant applications
- High temperature pipe and vessel insulation
- Furnace liners and heating element supports
- High temperature gaskets and seals
- Fire protection systems



What are the potential health risks?



Handling, cutting, or sawing RCF without dust control can release significant amounts of fibre. Short-term health effects include coughing, sneezing, and temporary irritation of skin, eyes, and nose. Higher exposure may cause difficulty breathing, congestion, and chest tightness. The amount, size, and durability of RCFs will determine how the body is affected. When working with RCFs, the greatest risk of exposure is due to inhalation of fibres and/or dust.

Along with the skin, eye, and respiratory effects caused by exposure to RCFs, there is also a concern that the individual fibres are small enough to penetrate deep into the lungs and possibly lead to the development of lung cancer, mesothelioma, or silicosis. At temperatures above 1,000°C, RCF can be transformed into crystalline silica (cristobalite).

Although there is no conclusive proof that RCFs can lead to cancer in humans, both the Canadian Environmental Protection Agency and the American Conference for Governmental Industrial Hygienists list RCFs as “**probable**” and “**suspected**” human carcinogens respectively.

How can you help protect yourself when working with RCF?

Protect yourself by knowing where RCFs are in your workplace. Always wear proper personal protective equipment, such as a respirator, when working in an area with RCFs.

If you are working with RCF, your company will have specific procedures and controls that you must follow.

Sites may classify the “type” of work you are doing around/near RCF based on the risks of exposure. Different “types” of work will have different controls such as signage, PPE, and decontamination requirements.



Remember: Toxic substances are only harmful when allowed to enter the body. Keep yourself protected at all times.

Should irritation develop, the following first-aid measures are recommended:

| | Symptoms | Treatment |
|--|---|---|
| SKIN | Direct contact with sharp, broken fibres may result in inflammation and/or rash. | Remove/replace soiled clothing. Do not rub or scratch exposed skin. Wash area of contact thoroughly with soap and water. Using a skin cream or lotion after washing may be helpful. |
| EYES | If no eye protection is worn, eyes may become irritated by exposure to RCFs. | Flush eyes immediately with a large amount of lukewarm water. Eyelids should be held away from the eyeball to ensure thorough rinsing. Do not rub eyes. Get medical attention if irritation persists. |
| UPPER RESPIRATORY TRACT (nose and throat) | Exposure to high concentrations of airborne RCF can initiate coughing and wheezing. | Move the person to a dust-free location. Get medical attention if the irritation continues. |